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July 6, 1999

Ms. Chuck Schwer Vermont ANR/DEC Waste Management Division 103 South Main St. /West Building Waterbury, VT 05671-0404

RE:

Investigation of Subsurface Petroleum Contamination at the Norton Border

Station, Norton, VT (VT DEC Site #91-1099)

Dear Mr. Schwer:

Enclosed please find the summary report for a site investigation conducted at the above referenced site. This report has been forwarded to the Vermont Department of Environmental Conservation (VTDEC) following the approval of Mr. Howard Reid of Reid's Building Services.

Mr. Reid supervised the activities at the Norton Border Station for GSA. He indicated in a telephone conversation with me today that Mr. Bob Illsley, who has been the GSA contact for this site, is no longer working for GSA. Any future correspondence regarding the Norton Border Station should be directed to Mr. Kevin Morris of GSA.

Please contact me if you have any questions or comments regarding this report.

Sincerely,

Beth Stopford

Environmental Engineer

Enclosure

cc:

GI#39941486

INVESTIGATION OF SUBSURFACE PETROLEUM CONTAMINATION AT NORTON BORDER STATION

JUNE 9, 1999

Site Location:

Norton Border Station Route 147 Norton, VT

VTDEC SITE #91-1099 GI Project # 39941486

Prepared For:

Bob Illsley, General Services Administration P.O. Box 336 Montpelier, VT 05601

Under the direction of:

Howard Reid Reid's Building Services RR 1, Box 472A Pittsburgh, NH 13592

Prepared By:



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I. INTRODUCTION

This report summarizes the investigation of suspected subsurface petroleum contamination at the Norton Border Station located on Route 147 in Norton, VT (see site location map in Appendix A). This investigation was conducted by Griffin International, Inc. (Griffin) for the General Services Administration (GSA) under the direction of Reid's Building Services, to address petroleum contamination detected during an underground storage tank (UST) closure inspection in August 1991. Mr. Chuck Schwer of the Vermont Department of Environmental Conservation (VTDEC) requested that this work be completed in a phone conversation with Mr. Kevin Morris of GSA on December 15, 1998. The site (VTDEC Site #91-1099) is owned by GSA, of Montpelier, VT.

Work conducted at the site included the advancement of a single boring in the vicinity of a former No. 2 fuel oil UST, and the collection and laboratory analysis of a confirmatory soil sample. In addition, a sensitive receptor risk assessment was conducted to assess the risk that subsurface petroleum contamination at the site may pose to potentially sensitive receptors identified in the site vicinity. Griffin's Work Plan and Cost Estimate for Subsurface Investigation at Norton Border Station dated January 8, 1999 was approved by Mr. Howard Reid of Reid's Building Services in a phone conversation with Griffin on March 4, 1999, and by Mr. Chuck Schwer of the VTDEC in a letter dated March 10, 1999.

II. SITE BACKGROUND

A. Site History

Subsurface petroleum contamination was detected in soil at the Norton Border Station site during the closure of (1) 500-gallon No. 2 fuel oil UST. Tank closure activities were conducted on August 16, 1991. The UST was located on the northern side of the property, approximately 100-feet south of the Coaticook River. The removed UST was replaced with a new 500-gallon No. 2 fuel oil UST in the same vicinity. Details of the closure inspection are outlined in the Underground Storage Tank Permanent Closure Form and letter report, which were submitted to the VTDEC on August 19, 1991 by Griffin [1].

Approximately 20 cubic yards of petroleum contaminated soils were stockpiled on-site during UST removal and replacement activities. The stockpiled soils were screened by Griffin personnel in June 1992. Details of soil stockpile screening activities are described in a June 26, 1992 letter report to Mr. Kevin Morris of GSA [2]. According to Mr. Kevin Morris, the stockpiled soils were transported from the site by the Vermont Department of Transportation (VT DOT) to be used at a nearby VT DOT facility [3]. According to Mr. Howard Reid of Reid's Building Services, these soils were removed sometime in 1992 [4].

Limited Site Investigation – Norton Border Station 06/09/99
Page 2

In compliance with a request from the VTDEC that additional work be conducted at this site in order to determine the degree and extent of petroleum contamination, GSA retained the services of Griffin to conduct this limited site investigation.

B. Site Description

Norton Border Station is located on the west side of Route 147 in Norton, VT (see Site Location Map in Appendix A). The property is bordered on the north by the Coaticook River and the Canadian Border, to the west by open space and railroad tracks. A customs broker is located to the south, and Route 147 and a duty free shop are to the east. The property slopes gently towards the river, and steepens as it approaches the river.

There are two buildings on the subject property, the Border Patrol and Customs building and a loading dock/inspection station. The site is primarily pavement and lawn.

C. Site Geologic Setting

According to the Surficial Geologic Map of Vermont [5], the site is underlain by lake bottom sediments consisting of silt, silty clay, and clay. Soils encountered during soil boring activities consisted primarily of well-graded sand and silt overlying clay. Bedrock at the site is mapped as undifferentiated granitic rocks of the New Hampshire plutonic series [6]; however bedrock was not encountered during this initial site investigation.

Based on visual observation and review of the USGS topographic map [7], groundwater in the vicinity of the Norton Border Station site would be expected to flow to the north or northwest toward the Coaticook River, following topographic contours.

III. INVESTIGATIVE PROCEDURES

A. Soil Boring Advancement

On April 26, 1999, one soil boring (SB1) was advanced by Green Mountain Boring of East Barre, Vermont using a hollow stem auger drilling rig. Drilling was directly supervised by a Griffin engineer. Soil samples were collected at five foot intervals from the boring. Each soil sample was screened for volatile organic compounds (VOCs) using an HNu Model HW-101 photoionization detector (PID) equipped with a 10.2 eV bulb. Soils were screened using the Griffin Jar/Polyethylene Bag Headspace Screening Protocol, which conforms to state and industry standards. Contaminant concentrations and soil characteristics were recorded in a detailed boring log by the supervising Griffin engineer (see the Boring Log in Appendix B).

Limited Site Investigation - Norton Border Station 06/09/99 Page 3

The soil boring was installed in the vicinity of the former No. 2 fuel oil UST, and in a presumed downgradient direction of the existing No. 2 fuel oil UST. A confirmatory soil sample was collected from the extent of boring and submitted for laboratory analysis.

The boring for SB1 was advanced to 17 feet below grade. Soils from the boring for SB1 consisted of well-graded sand with silt from 0 to 2 feet below grade. Well-graded, moist sand with silt was observed between 5 and 7 feet below grade. Moist, olive gray, lean clay was observed from 10 to 12 feet below grade. Moist, olive gray, lean clay was also observed between 15 and 17 feet below grade. The clay layer was completely penetrated during advancement of the split spoon between 15 and 17 feet below ground surface. Soil samples collected for PID screening contained VOC concentrations ranging from 0.0 to 0.1 parts per million (ppm). The maximum reading of 0.1 ppm was detected between 10 and 12 feet below grade.

Petroleum odors were encountered in soils from the auger flights during advancement of SB1. Several samples were collected from the auger flights and screened with the PID. The maximum PID reading was 3 ppm in soils collected from a depth of 8 to 10 feet below grade. The VOC concentrations detected in the soil samples collected for screening are below Soil Guideline Thresholds set by the Waste Management Division of the VTDEC (as per Agency Guidelines for Contaminated Soils and Debris [August, 1996]). The VTDEC standard for soils contaminated with No. 2 fuel oil is 10 ppm when measured with a PID.

Groundwater was encountered at approximately 8 feet below grade. This is believed to be a surficial layer of groundwater, fed by surface drainage, and sat on top of the underlying clay layer. The clay layer was moist. A deeper aquifer was observed after penetrating the clay layer, this water was located at the approximate level of the Coaticook River.

In accordance with Griffin's Work Plan/Cost Estimate, a monitoring well was not installed because soil samples collected for screening with the PID did not exhibit VOC concentrations above 10 ppm.

В. Soil Sample Collection and Analysis

A confirmatory soil sample was collected from SB1 on April 26, 1999. The sample was collected from the auger stem at the 14 to 15 foot depth. Samples were analyzed for the presence of VOCs per EPA Method 8021B and total petroleum hydrocarbons by EPA Method 8015 DRO. Results of the laboratory analyses are summarized in Table 1. Laboratory report forms are presented in Appendix C.

None of the targeted compounds were detected in the soil sample analyzed. The soil sample results are compared to the applicable state standards in Table 1. In absence of compoundspecific soil quality standards, the Waste Management Division of the VTDEC allows the

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substitution of Vermont Groundwater Enforcement Standard (VGES) numerical values (expressed in ug/L) to serve as soil standards (expressed in ug/kg) when evaluating site soil quality data (as per *Agency Guidelines for Petroleum Contaminated Soils and Debris* [August, 1996]). The VTDEC soil standard for TPH is 1,000 mg/kg.

Table 1. Summary of Laboratory Analysis

Parameter	Soil Sample SB1	Applicable Standard
Benzene	nd(10.0)	5
Toluene	nd(10.0)	1,000
Ethylbenzene	nd(10.0)	700
Xylenes (Total)	nd(12.0)	10,000
1,3,5 Trimethyl Benzene	nd(10.0)	4
1,2,4 Trimethyl Benzene	nd(10.0)	5
Napthalene	nd(50.0)	20
MTBE	nd(50.0)	40
TPH (mg/kg)	nd(20.0)	1,000

All concentrations in ug/kg unless otherwise noted nd – none detected

The detection limit for benzene, 1,3,5 trimethyl benzene, 1,2,4 trimethyl benzene, napthalene, and MTBE in the soil sample was elevated slightly above the applicable standard. In accordance with Agency Guidelines for Petroleum Contaminated Soils and Debris, a value of 5 ug/kg (i.e., equivalent with the standard) can substitute for a non-detect value of benzene when the sample specific detection limit is elevated above the standard.

The soil sample was collected according to Griffin's soil sampling protocol, which complies with industry and state standards.

C. Sensitive Receptor Risk Assessment

A receptor risk assessment was conducted to identify known and potential receptors of potential contamination at the Norton Border Station. A visual survey was conducted during advancement of the soil boring. Based on these observations, a determination of the potential risk to identified receptors was conducted based on proximity to the expected source area (i.e., former No. 2 fuel oil UST), presumed groundwater flow direction, and contaminant concentration levels in the confirmatory soil sample.

Water Supplies

The Norton Border Station is serviced by a supply well located inside the Customs/Border Patrol building. According to Howard Reid, the site manager, the well was drilled when the buildings were built in approximately 1933. The well is approximately 100 to 150 feet deep [4]. The supply well is in a presumed upgradient direction of the fuel oil UST. Given its sufficient distance and its location in a presumed upgradient direction of the source area, and the low to nondetectable VOC concentrations measured in soils during soil boring advancement, the supply well is considered at minimal risk of petroleum impact.

Buildings in the Vicinity

The Customs/Border Patrol Station and the garage housing the Loading Dock/Inspection Station are the only buildings located on the subject property. The on-site buildings are located topographically upgradient of the location of the former and existing 500-gallon No. 2 fuel oil USTs. The buildings are constructed on slab foundations, and are partially below ground surface due to the slope of the property. Given that the concentrations of petroleum constituents detected in the soil sample collected for laboratory analysis on April 26, 1999 were non-detectable, the potential risk of vapor impact to the on-site building is considered minimal.

The Customs Broker located to the southwest of the subject property is located topographically up and crossgradient of the source area. The Duty Free Shop to the east is located topographically upgradient of the source area. Given that the concentrations of petroleum constituents detected in the soil sample collected for laboratory analysis on April 26, 1999 were non-detectable, and their sufficient distance from the source area, these residences are not considered at risk of petroleum impact.

Surface Water

The nearest surface water to the site is the Coaticook River, which is located approximately 100 feet north of the former No. 2 fuel oil UST location. This water body is topographically downgradient of the subject property and the source area. The river was inspected for evidence of petroleum impact on April 26, 1999. No sheens or odors were observed. Given the nondetectable concentrations of targeted compounds measured in the soil sample collected on April 26, 1999, the Coaticook River is considered at minimal risk of petroleum impact.

IV. CONCLUSIONS

Based on the initial site investigation of petroleum contamination at the Norton Border Station site, the following conclusions are offered:

- 1. Subsurface petroleum contamination was detected in soils at the Norton Border Station site during the closure of (1) 500-gallon No. 2 fuel oil UST in August 1991.
- 2. The No. 2 fuel oil UST removed from the site was replaced with a new 500-gallon No. 2 fuel oil UST in the same vicinity in August 1991.
- 3. Approximately 20 cubic yards of petroleum contaminated soils were stockpiled on site during UST removal and replacement activities. These soils were screened in June 1992, and soils were removed from the site sometime in 1992, following soil screening activities.
- 4. One soil boring (SB1) was advanced at the site on April 26, 1999, in the vicinity of the former No. 2 fuel oil UST, to evaluate the degree of subsurface petroleum contamination detected during the UST closure inspection.
- 5. Low levels of adsorbed petroleum contamination (between 0.0 ppm and 3 ppm) were detected in the soils collected from the borehole for SB1. This maximum reading of 3 ppm is below the state guideline of 10 ppm for fuel oil in soils as measured with a PID.
- A confirmatory soil sample from the soil boring was submitted for laboratory analysis.
 None of the compounds targeted by the analyses were detected in the confirmatory soil sample collected from SB1.
- 7. No receptors are believed to be at risk from subsurface petroleum contamination, based on currently available data.

V. RECOMMENDATION

Based on the results of this site investigation, Griffin recommends that the Norton Border Station in Norton, Vermont site be removed from the VTDEC Active Hazardous Waste Sites List. This recommendation is offered based upon achievement of the following closure criteria, as per the VTDEC Site Management Activity Completed (SMAC) Checklist (dated December 1, 1997):

1) The source(s), nature, and extent of the petroleum contamination at the site have been adequately defined.

See Conclusions #1, and #4.

2) Source(s) has been removed, remediated, or adequately contained.

See Conclusions #1, #2, and #4.

3) Levels of contaminants in soil and groundwater shall be stable, falling, or non-detectable.

See Conclusion #4 and #5.

4) Groundwater enforcement standards are met at the following compliance points:

Any point of present use of groundwater as a source of potable water: not determined due to screened soils exhibiting VOC concentrations less than 10 ppm.

Any point at or within the boundary of any Class I groundwater area: The Norton Border Station site is not within a Class I groundwater area.

Any point at the boundary of the property on which the contaminant source is located: not determined due to screened soils exhibiting VOC concentrations less than 10 ppm.

5) Soil guideline levels are met. If not, engineering or institutional controls are in place.

See Conclusion #4.

6) No unacceptable threat to human health or the environment exists on site.

See Conclusions #4, #5, #7, and #8.

7) Site meets RCRA requirements.

Available records indicate that the Norton Border Station is not in violation of the Resource Conservation and Recovery Act (RCRA) as defined in 40 CFR 264.

8) Site meets CERCLA requirements.

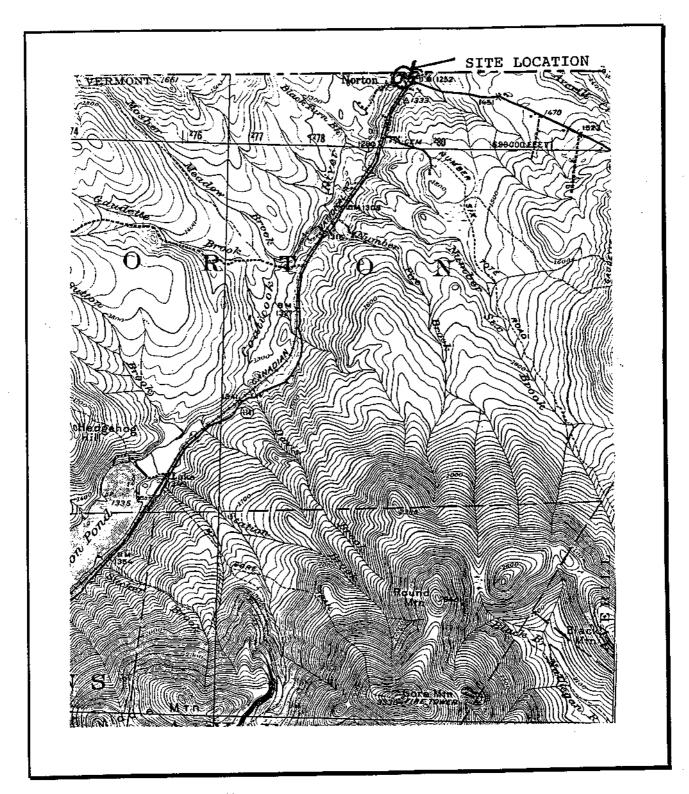
Available records indicate that the Norton Border Station is not in violation of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as defined in 40 CFR 300.

VI. REFERENCES

- Griffin International Inc., August 19, 1991. UST Closure Letter Report from Don Tourangeau to Marc Coleman (VTDEC) re: U.S. Border Station, Norton, VT, UST System Closure Inspection.
- 2. Griffin International Inc., June 26, 1992. Letter Report from Peter Murray to Kevin Morris (GSA) re: Contaminated Soils Norton Border Station.
- 3. Kevin Morris, GSA. December 15, 1998 telephone conversation with Kristen Underwood, Griffin International, Inc.
- 4. Howard Reid, Reid's Building Service. June 9, 1999 telephone conversation with Elizabeth Stopford, Griffin International, Inc.
- 5. Doll, Charles G., ed., 1970, Surficial Geologic Map of Vermont, State of Vermont.
- 6. Doll, Charles G., ed., 1961, Centennial Geologic Map of Vermont, State of Vermont.
- 7. USGS 7.5 Minute Topographic Quadrangle Map. 1953. Island Pond, Vermont.

APPENDIX A

Maps

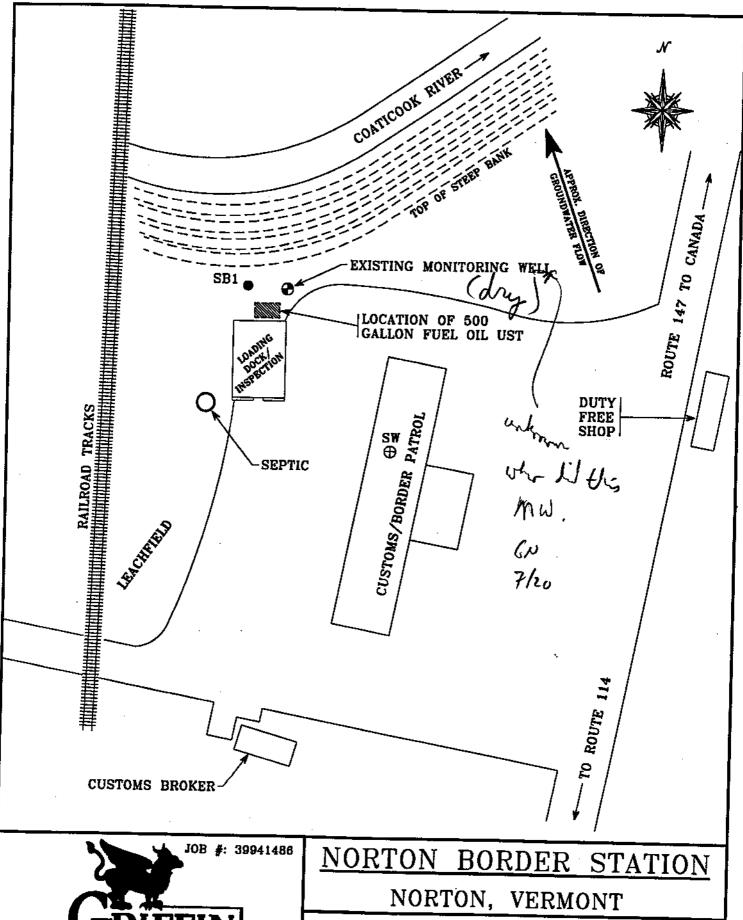


SITE LOCATION MAP – NORTON BORDER STATION

Norton, Vermont

Norton, vermont Source: Island Pond, Vermont, USGS 7.5-minute Topographic Quadrangle, 1953.







SITE **SKETCH**

DATE: 4/28/99

DWG.#:2

SCALE: ~1"=50' DRN.:SB APP.:BS

APPENDIX B

Boring Log

PROJECT NORTON BORDER STATION	WELL	NUMBER	SB1
LOCATION NORTON, VERMONT	Site Sketch	S	Bi • A
DATE DRILLED 4/26/99 TOTAL DEPTH OF HOLE 17.0'	E CK		
DIAMETER 4.25"	₽¥ #	ж 1	Olyc
SCREEN DIA. NA LENGTH NA SLOT SIZE NA	₹	**	TONE TON
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	- 1 - 2 - 3 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4	BACKFILL UNDISTURBED	0.1 ppm 5'-7' 9/4/12/8 0 ppm 10'-12' 9/8/9/9 0.1 ppm	well graded sand organic material. 8.0' WATER LEAN CLAY (CL)— sand, moist, olive cobbles and organic material.	D WITH SILT (SW)— 10 sand, moist, brown, TABLE 90% clay, 10% medium gray with brown, nic material.	1 - 2 - 3 - 4 - 5 - 7 - 8 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 - 24 - 24 24 - 2

APPENDIX C Laboratory Analysis Reports



Laboratory Services

32 James Brown Drive Williston, Vermont 05495 (802) 879-4333 FAX 879-7103

LABORATORY REPORT

CLIENT: Griffin International

ORDER ID: 2111

PROJECT: Norton Border Station

DATE RECEIVED: April 27, 1999

REPORT DATE: May 7, 1999

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Different groups of analyses may be reported under separate cover.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits, unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D. Laboratory Director

enclosures



Laboratory Services

32 James Brown Drive Williston, Vermont 05495 (802) 879-4333 FAX 879-7103

LABORATORY REPORT

CLIENT: Griffin International

PROJECT: Norton Border Station

REPORT DATE: May 7, 1999

ORDER ID: 2111

DATE RECEIVED: April 27, 1999

SAMPLER: BS

ANALYST: 725

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Ref. Number: 137492	Site: SB1	<u> </u>	Date Sampled: April 26, 199	99 Time: 10:35 AM
<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Method</u>	Analysis Date
MTBE	< 50.0	ug/Kg, dry	SW 8021B	5/3/99
Benzene	< 10.0	ug/Kg, dry	SW 8021B	5/3/99
Toluene	< 10.0	ug/Kg, dry	SW 8021B	5/3/99
Ethylbenzene	< 10.0	ug/Kg, dry	SW 8021B	5/3/99
Xylenes, Total	< 20.0	ug/Kg, dry	SW 8021B	5/3/99
1,3,5 Trimethyl Benzene	< 10.0	ug/Kg, dry	SW 8021B	5/3/99
1,2,4 Trimethyl Benzene	< 10.0	ug/Kg, dry	SW 8021B	5/3/99
Naphthalene	< 50.0	ug/Kg, dry	SW 8021B	5/3/99
UIP's	> 10.	·	SW 8021B	5/3/99
Percent Solid	76.	%	SW 8021B	5/3/99
Surrogate 1	105.	%	SW 8021B	5/3/99

32 James Brown Drive Williston, Vermont 05495 (802) 879-4333

CHAIN-OF-CUSTODY RECORD

20 29978

(802) 879-4333																						
Project Name: Norton Border Station Site Location: Norton, VT									Reporting Address:							Billing Address:						
Endyne Project Number:									Contact Name/Phone #: For a Shorten 90 4654288 Phone #: 7000										5 Shepterd 5005 4288			
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2	Chloric			7	Total P			12	TS	s			7	Coliform (Specif	y)	22	EPA 625 B/N or A	27		8010/8020		
3 4	Ammo			8 Total Diss, P			13	TI			1	8	COD		23	EPA 418.1	28	EPA 8	8080 Pest/PCB	 .		
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Laboratory Services

32 James Brown Drive Williston, Vermont 05495 (802) 879-4333 FAX 879-7103

LABORATORY REPORT

CLIENT: Griffin International

ORDER ID: 2111

PROJECT: Norton Border Station

DATE RECEIVED: April 27, 1999

REPORT DATE: May 14, 1999

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Different groups of analyses may be reported under separate cover.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits, unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D. Laboratory Director

enclosures



Laboratory Services

32 James Brown Drive Williston, Vermont 05495 (802) 879-4333 FAX 879-7103

LABORATORY REPORT

CLIENT: Griffin International

PROJECT: Norton Border Station

REPORT DATE: May 14, 1999

ORDER ID: 2111

DATE RECEIVED: April 27, 1999

SAMPLER: BS

ANALYST: 820

 Ref. Number: 137492
 Site: SB1
 Date Sampled: April 26, 1999
 Time: 10:35 AM

 Parameter
 Result
 Unit
 Method
 Analysis Date

 TPH 8015 DRO
 < 20.0</td>
 mg/Kg
 SW 8015B
 5/13/99

32 Jamus Brown Drive Williston, Vermont 05495 (802) 879-4333

CHAIN-OF-CUSTODY RECORD

2.09 19973

	(802) 879-4333														
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New York	State Project: Yes	No.		1			Requested	Analy	/ses						
1 1	I pli 6 TKN				11	Total Soli	ds	16	Metals (Specify) .	21	EPA 624	26	EPA 8270 B/N or A	Acid
2	Chloride	7 Total P			12	TSS		17	Coliform (Spec	ify)	22	EPA 625 B/N or A	27	EPA \$010/8020	
3	Ammonia N	8	Total Diss. P	 -	13	1DS		18	COD	· <u>·</u>	23	EPA 418.1	28	EPA 8080 Pest/PC	B
4	Nitrite N	9	BOD,		14	Turbidity		19	втех		24	EPA 608 Pest/PCB			
5	Nitrate N	10	Alkalinity	·	15	Conductiv	rity	20	EPA 601/602		25	EPA 8240			
29	TCLP (Specify: volatiles, sen	ni-volatiles	, metals, pesticides, h	erbicides)							11		<u> </u>	•	•
	<u> </u>		-		·····	- نسب م	· 75 /2 ·							•	